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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,489	04/08/2002	Karsten Hansen	35-227	7050

7590 11/06/2003
Nixon & Vanderhye
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EXAMINER

GABOR, OTILIA

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/018,489	Applicant(s) HANSEN ET AL.	
	Examiner Otilia Gabor	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4/8/02</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

The abstract presented in the PCT/EP00/05758 application will be used in the interim.

Claim Objections

2. Claims 6-26 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (U. S. Patent 5,041,729).

Takahashi et al. discloses a detector module for X-ray radiation measurement, the module comprising:

- a plurality of detector elements (12 photodiodes) 12 positioned as an array on a scintillating material 11, the array having a first surface (62) facing an X-ray source (see Figs.1B,1C) and a second surface (66) facing away from the radiation source (the side facing towards surface 13)
- a conductor track carrier 13 (i.e., supporting surface that has on its back surface conducting lines, electrodes 19, 20) which is arranged at a distance from the second surface (66) (they are separated by an adhesive layer 14, see Col.7, lines 39-68) and which has on its back surface (i.e., not the side facing the second surface 66 of the sensor array) a plurality of conducting lines (tracks) 19 and 20 (one pair for each sensing element)
- first connections of detector elements 12 which are located on the second surface 66 of the detector array being connected to the conductor tracks 20 through bonding wires 18
- second connections 15 of detector elements 12 which connections can take the form of a single conducting bonding pad (i.e., chain bonding connection), which connections are provided at an external edge of the detectors 12 (see Figs.2, 4) and which can serve as the common ground electrode for the sensing elements 12 (i.e., as a bus line) connected to the signal line 19 through bonding wires 17
- a plurality of pins 21, 22 (one for each signal line 19, 20) connected to each of the conductor tracks 19, 20 for guiding the signals from the detector elements

12 to signal processing electronics. See Col.3, lines 5-68, Col.7, lines 39-68, Col.8 and Figs.1, 2, 3C.

Regarding claim 1 Takahashi fails to specifically disclose that the bonding wires connect the detectors to the conducting tracks 19, 20 through bores, one for each connection. However, this is inherent in the arrangement as disclosed by Takahashi, for the following reasons: each of the photodiodes, thus sensing elements 12, is covered by the support layer 13 through an insulating adhesive layer 14; the conducting tracks 19, 20 are located on the back side of the support layer 13 (the side opposite the one facing the photodiode). As such, in order to make an electrical connection between the photodiodes and the conducting tracks through wire bonding, the wire has to go first through the insulating adhesive layer 14, then through the supporting layer 13 to get to the other side of it where the conducting tracks 19 and 20 are. The only possible way to do that using bonding wires is by guiding the wires through vias or holes (i.e., bores) in the supporting substrate. Since each of the photodiodes is separately connected to individual tracks, it follows that for each connecting wire there must be a separate bore. Thus, it is inherent in the arrangement of Takahashi that the wire connections are guided through bores, or alternatively, it would have been obvious to one of ordinary skill in the art at the time the invention was made to guide the wire connections through bores, since having such an arrangement greatly eliminates extraneous noises that the wires might pick up if connected on the outside of the support substrate, as well as because this connection greatly reduces the size of the detector array, since there is no

need to leave extra space between the sensor elements to accommodate the wire connections (thus the detector module is much more compact).

5. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. and further in view of Iwanczyk et al. (U. S. Patent 6,521,894) and Marshall et al. (U. S. Patent 6,515,285).

Takahashi et al. fails to specify the photodetector sensor elements 12 in the array as drift detectors that are integrated with amplifier electronics and field effect transistors. However, it is well known in the art, as disclosed by Marshall et al. in Col.2, lines 12-19, that in order to increase the signal-to-noise ratio in a detection system, the sensor elements in the array are monolithically integrated with the signal amplifying and processing circuits. Therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to include the integrated circuit of Iwanczyk et al. into the detection system of Takahashi, since both are motivated to increase the signal-to-noise ratio in their detection system. Iwanczyk et al. discloses using silicon drift photodetectors 11 in the array, coupled to a scintillator 37 and integrally formed with an amplifier circuit and field effect transistors 20 (see Col.7, lines 5-42, Col.8, lines 8-12, and Fig.1). Iwanczyk discloses that using drift photodetectors coupled with amplifying electronics as well as FETs greatly increases the signal-to-noise ratio in the detection system (see abstract).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Dorman et al. (U. S. Patent 4,700,076) – discloses an X-ray detector with sensor elements in an array and in connection with a conductor track substrate through wire connection.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 703-305-0384. The examiner can normally be reached on Monday-Friday between 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

og
Otilia Gabor
AU 2878

